

The Acute and Chronic Effects of Flavonoids on The Absorption and Tissue Distribution of Selenium in Rats

Abstract

Abstract The present study was designed to evaluate the effects of acute- and chronic use of the flavonoids silibinin, epigallocatechin gallate (EGCG), quercetin and rutin on the absorption and tissues distribution of selenium (Se) after single oral dose of Na-selenite. In the first part, thirty rats were allocated into 5 groups: 1st group treated with olive oil and served as control; the other 4 groups were treated with either silibinin (100mg/kg), EGCG (25mg/kg), quercetin (50mg/kg) or rutin (500mg/kg), administered orally as oily solutions for 30 days. Then, all groups received orally single doses of Na-selenite (0.5mg/kg) 2 hrs after administration of the last doses of the flavonoids and the vehicle. In the second part, similar protocol was followed as in the first part, except for the duration of flavonoids treatment, where only single doses were administered. The animals were sacrificed 3 hrs after Se administration. Blood samples, brains, kidneys and livers were obtained for evaluation of Se content using atomic absorption spectrometry. Chronic use of flavonoids increased serum and tissues Se significantly compared to control. While acute use did not change tissues Se levels, but significantly decreasing serum Se in all flavonoids treated groups, except for EGCG-treated group. In conclusion, chronic use of flavonoids increases serum and tissues levels of Se, while single doses approach reveal a significant decrease in serum levels without affecting tissues distribution; highly significant positive correlation between serum and kidney Se were also reported.